QUANTA

CONTENTS

INFORMATION ON THE GROUP

Membership of QUANTA (QL Users and Tinkerers Association) is by subscription to QUANTA, the group's newsletter, which is published monthly. Membership details are obtainable from the secretary. Membership of the group is open to anyone with an interest in the Sinclair QL microcomputer.

Members requiring assistance with problems related to the QL may write to or phone the secretary. An attempt will be made to put them in touch with a member who can help with the problem.

Workshops will be arranged from time to time in various parts of the country.

The group maintains a software library. Most of the programmes are free to members. A library list will be published from time to time. Programmes are obtainable from the sub-librarians.

A list of members in any particular area is obtainable from the secretary.

Please send all contributions to the newsletter to the editor.

Chairman and Newsletter Editor	Secretary and Newsletter Publisher
Leon Heller, 65, Flanders Mansions, Flanders Road, London. W4 1NF Tel: 01-994 7976	Brian Pain, 24, Oxford Street, Stony Stratford Milton Keynes MK11 1JU Tel: (0908) 564271

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QUILL, ABACUS, ARCHIVE and EASEL are trade marks of PSION Ltd.

NOTES FOR CONTRIBUTORS TO QUANTA

QUILL files on Microdrive or 40 track disk (single or double sided), are preferred. Cartridges and disks will be returned ASAP. Printed or hand written material is acceptable, of course.

Short programmes can be included, but lengthy programmes should be placed in the library, and a description sent in for the newsletter

LATE COPY *********************************
For Sale.
1 QL + DFS + Cumana 400K SW Drive £320.00 (or Split).
1 DFS for QL £65.00. 1 LYL/Shusart 2 x 100k Drive £95.00. 1 UCHIOR 0/Wheel Printer + extra wheels & ribbons £120. 00. 1 Centronics 1/face. £30.00. All - like NEW - owner Going abroad. Ring 01-381-9421 evenings.
******** **************************************
W**orkshops.**
Birmingham June 1 & 8 New Imperial Hotel Machine Code. & 512k upgrades.
Swindon Weekend Workshop 17/19/20 October 1986
Ring for Edinburgh date. - Brian Pain.

EDITORIAL

By now you mast have heard of Sinclair selling out to Amstrad. I was at the press conference when the announcement was made, and Alan Sugar, the Amstrad MD, indicated that he wasn't very interested in the QL. I asked him if he would be prepared to sell the QL rights to anyone, and he replied that he would be quite happy about this, but he really didn't know very much about the machine. Apparently, Amstrad have announced that a statement about the QL, will probably be made before the end of April.

PSION are referring users whose QLUB membership has expired to QUANTA. I was to have had a meeting with Alison Maguire of Sinclair to discuss a similar arrangement with her, but the Amstrad takeover put paid to this. I have written to Amstrad, suggesting that we take on customer support for the QL, and also pointing out several reasons why it would be very short-sighted of them to drop the machine. I feel it would be counterproductive for members to write to Amstrad individually, as some of you have suggested, so please leave things to us. Even if Amstrad do drop the QL, it is quite likely that the machine will continue in production, although I can't say anything more at this stage.

Once again, I have had too much material for this issue, so some contributions have nod to be held over for the next issue.

Leon Heller

MEMBERS' LETTERS

You may recall the microdrive r/w assemblers programme in the final QL User. Well there is a bug in the assembler programme on line 0110. The local label '3%' should be on line 0109.   If a duff sector header is found, which seems to happen first time invariably with my drives, then the pointer (A1) to the buffer end is not initialised and the next 14 bytes overwrite the drive/sector locations and so on! Colin Opie must have tested with good Microdrives and found a good sector header every time.

Can you recommend a disassembler and debugger (with breakpoint handling etc)?

A J Firshman

/* An excellent disassembler is in the software library (£l option). Tony Tebby's monitor available from Qjump (review in the next issue) is probably the best debugger available, and includes a disassembler. A monitor/debugger is also in the library. LFH */

Having purchased in March of last year a QL for £399.00 I returned to John Lewis at Brent Cross in early February to find it on sale at under £150.00. As the salesman said they would not be stocking the QL any more it seemed a rather dangerous exercise to invest in a system which could go the way of the C5. It now seems that WH Smith and John Lewis have no stock and the new 128 Spectrum has become the standard for Sinclair.

**** **For Workshop Details SEE PAGE 2** ************

Although you had commented that a new QL with disc drive is in the pipe line it seems as though this is at least 12 months away.

As manufacture of the QL must have been discontinued does it mean that QUANTA will become an organisation similar to the MG Owners Club?

Is there scope for BUG, a Business Users Group, as an increasing proportion of letters in QUANTA appear to comment on business uses of the QL? The business user, regardless of trade, has a great deal of common ground and possibly more to learn from joint meetings than the dedicated hacker.

Anybody interested in such a proposition could get in touch with me.

Dennis Jones,
The Phygtle,
Chalfont St Peter,
Bucks.

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I would like to comment on recent "Eidersoft". Letters.

I have had dealings with Eidersoft for some time and despite one hiccup, I have been more than satisfied with their courtesy and promptness. Following my bad Medic experience it is nice to deal with a company who are genuinely interested in their customers. I say I had one hiccup. It was in fact a long delay in replying to a query concerning Mailmerge, but I was pleasantly surprised to receive a very nice letter with some useful tips from S.D. Williams. If more companies were like Eidersoft there would be no sour taste in the computer world.

David McCullagh,
244, Sundrive Road,
Dublin 12,
Ireland.

————————

I wrote to IQLUG recently concerning various aspects of my use of the QL, including some "problems" with Supercharge, the Digital Precision SuperBASIC Compiler. One of the points I raised referred to a problem with files being opened but not being able to read from them. I have not been able to solve that particular problem, and I have received a letter from Simon Goodwin of Digital Precision. Basically, I cannot reproduce my "fault" in a simple programme so I have come to the conclusion

that it must be a more subtle problem associated with the complexity of Chas Dillons' ARCHIVE repair programme. This is possibly because I do not possess the Toolkit that Chas has used in some of his calls (notably FOP IN and BGET), perhaps that is the explanation. Simon Goodwin tells me that Chas was involved in testing the compiler and that he has successfully compiled his routine.

On a more positive note, on the same cartridge as this letter, I have an ARCHIVE programme that will perform two of the more obvious omissions from the database language. Namely, adding extra fields to a file and merging two files with a common structure. I hope it can be included in the library and be of some use to the other members. The only "sneaky" technique is using the "SPOOLON file export" command to create procedures that can be called by the programme that creates them. This allows field names, typed in at the keyboard, to be placed into a "create" structure by "lprinting" the names to a file and merging that file back into the programme.

K. J. Tilley,
35, Springfield Rd.,
St. Albans,
Herts
AL1 5LY

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Further to the February QUANTA, and after a long, irritating, and fruitless correspondence with Sinclair, I very successfully upgraded my AH (D09) QL to version JS ROM using Dennis Briggs' chips and advice some three months ago. I have not yet found any wiring changes necessary and find it somewhat Damoclean that you think there are some! It is somewhat tricky arranging for oneself, the chips, and the QL all to be earthed throughout and I took Dennis' advice and arranged for a "suitable friend" to help me. The worst problem was in safely re-aligning the prongs of one of the chips which had got bent in transit. It all took about two hours to do with no soldering. The JS ROM has worked perfectly since then.

It might be of interest to know that I have just spent three months compiling a suite of programmes using SUPERCHARGE from Digital Precision. Although the compilation and testing process is not quite as "automatic" as the advertisements would suggest, I can thoroughly recommend it as an excellent product producing dramatic decreases in load and run times. Several points have emerged however, including :-

- don't use subroutines that modify their arguments
- preferably don't use arguments at all, use globals Instead
- never use default channels for console I/O
- a$(0) does NOT contain the string length
- for my programmes, a lot more mdv space is required to store the load module , even though data space is not stored on Microdrive.
- if you use Tony Tebby's "POS" function supplied via IQLUG (as was!) then you should know it uses two bytes each time it is called . Not a lot you may think , until you call it inside a loop and memory is limited , in which case you get a data volume dependent OUT OF MEMORY condition. The same thing happens when you call POS from SuperBASIC but of course you then have the whole RAM to play with and so are less likely to notice it.

***** For Workshop Details see page 2 ************

Is there any way of accessing the number of free sectors and tape/disc name without having to do a "dir" to a file and then reading it back ?

Is there a detailed description of how type-ahead buffers are enabled and cleared? I use the Tony Tebby CURSEN and CURDIS routines which seem to clear any buffers declared in the "OPEN con_ statement . Neither Sinclair nor even Adrian Dicken's book say much about them.

Keith Williams,
21, Mexfield Road,
Putney,
London SW15 2RG.
Tel: 01-870 3787

_____

I started to install Gerd Oelkers' internal RAM upgrade, but then changed my mind. The chips cost me over £50, but I would be willing to accept £30. Please ring me on (0532) 539914 after 7 pm.

Anthony Ramsden,
20, Victoria Road,
Morley,
Leeds LS27 9DS.

_____

I have now a working 640K QL using the piggy back method and have found no problems with this excellent modification, so far. Unfortunately some programmes using peek in the memory such as "character set definitions" no longer work due to system variables being moved I suppose. Based on this I would like to make a request of some QLer to fitting a switch in the modification circuit to resume the memory to 128K for a test of compatibility in programme development etc, or failing that an adaption to existing programmes to be run on expanded systems.

Rob Sherratt's Fcopy_bas programme (even better with extra memory) is incompatible with Toolkit II (EPROM version) due to Rob's use of the variable string "FNAME$", an identical one is used in the toolkit. No great problem, just change the name and resave the programme. I just thought I would point it out in case a member was having trouble and did not know why.

On another subject; Supercharge compiler, of which I own a copy. I must agree with a previous member that the "Lenslok" security system is a right pain ** *** **** to use, any other protection would be preferable such as a dongle for instance. For the future, I for one will not buy any other programme\game\utility that has this device, I would rather go without.

Could you clarify, compiled programmes using "Supercharge" sent in to the Library would :

a)   Being free to members, be free from restrictions from Digital Precision.
b)   If a token payment required for a particular good or useful programme then would QUANTA undertake the purchase of a licence from D. P. as was suggested to me at one of the Microfairs.

Are there other compilers in the making that could change this situation as was mentioned some time ago in this magazine.

Yet another subject: reviews. It occurs to me that the same people receive this magazine earlier than others and so take advantage of free software offered if they review the software. What about a "Hit list" of members? Then, if and when programmes become available for review you can use this list sequentially; surely a lot fairer for all concerned. If you adopt this type of method then put me down for inclusion in the list.

L.A. Privett,
23, Tabrums Way,
Upminster,
Essex RM14 1SP.

/* Freddy Vaccha of Digital Precision has advised me that provided no charge is made for programmes compiled with the Supercharge compiler, they may be distributed via the library.

I'll try to allocate review software on a fairer basis, as suggested. LFH */

THE QL SCENE IN SPAIN

About 6,000 English QLs have been sold (AH ROMs, QDOS 1.03, PSION 1.02, 1.03). Following the initial launch, sales have decreased due to the lack of software and peripherals and the bugs in the early software. By the way, I don't know of any bug-free computer. The reviews didn't help either.

There have been some serious reviews, but also several attacking the keyboard, Microdrives, and because QDOS and SuperBASIC are not standard (what do they believe is standard?).

Another big criticism (insinuating fraud) is the fact that the QL doesn't have a true 32-bit processor. A true 32-bit chip is more expensive than the entire QL, and they forget that a lot of claimed 16-bit processors are really 8/16-bit devices.

All the 68000-based computers have suffered an attack made by another microprocessor manufacturer who claims that only his 8/32 and 16/32-bit processors have a 32- bit ALU, and the 68000 family processors have 16-bit ALUs, but they forget to add: any 68000 processor has three ALUs (original information in Ref. 1).
All the 68000 processors have three 16-bit ALUs, except, of course the fantastic, (and expensive), 68020. This has three 32-bit ALUs.

***** **For Workshop Details see Page 2** **************

We suffer from a lack of software and peripherals, and sometimes a shortage of Microdrives. The MicroPeripherals floppy, (single drive) was launched at £400. Today they cost £275.

Sales are growing slowly, as people get to know more about the QL. In my organization, a technical school, we bought many QLs, because we don't like to have to pay more for any software that couldn't run in a true 32-bit processor.

We aren't surprised about the new Sinclair Enigma; we plan to buy more QLs and some Enigmas, as workstations, when we need more processing power. I hope it will be QL-compatible, as the Spectrum 128, launched in Spain, is, 100% software compatible with the Spectrum+. If you have read something different about the 128's compatibility, its simply more false information.

Of course, all of our machines have been upgraded to MG ROMs, QDOS 1.13 and PSION 2.2.

SPANISH PACKAGES FOR THE QL

Four Spanish companies are developing software for the QL:-
ALSI: accounting, business.
TAKIS: accounting, business.
INFORMATICA TECNICA: a very complete architect's package, claimed to conform to our official building standards.
PURICOMP: DRAWN MOUSE, a very nice colour clone of macPaint.

Some of the packages are written in SuperBASIC, and are of course, candidates for Simon Goodwin's compiler.

Ref. 1: "A microprocessor for a changing world: The Motorola 68000", Edward Stritter and Tom Gunter, IEEE COMPUTER, FEB 1979.

Jose M. Guzman,
Ramon y Cajal 51,
41005 Sevilla,
Spain.

LIBRARY CORNER

It is nearly a year since I took over as Librarian and over that period there have been many changes. The library has trebled in size and with the aid of Brian Davies, we have maintained a high standard of new submissions. From the collection of short programmes in the early days where we were able to squeeze up to 50 on a cartridge we have many that occupy most if not all of the cartridge. TOM Bladohls Worm adventure now occupies 3 very full cartridges - after submitting it to Ron Dwight's compression programme!

By the time this is published we will have around 40 cartridges in the library covering most types of programmes from utilities to games. The second library guide was started last summer and currently contains details of 67 programmes on 17 cartridges with more coming in all the time, including many from overseas. We already have our first bi-lingual programme and in the near future expect to be able to offer French and Spanish versions of some of the programmes.

The long awaited Sciptula programme is now available from the library on its own cartridge (£1.00 option) and we now have a companion version from Finland (Perspective) by Seppo Syrjala. There are some real gems to be found on cartridges 21 upwards. For the games fans there is a Space Adventure programme, text adventures from Tom Bladen and Holland, a maze drawing programme and game, Froggy (With a novel method of recording the top scores), Patience (Next time you are in this country, Dane, I can make you a reciprocal offer), and although it is intended as a demonstration, from the "Virtual Windows" package (Library 24, (£1.00 option) should satisfy the jig-saw addicts. On the utilities side, Ron Dwight has donated several useful short programmes to be used in conjunction with his SuperBASIC extensions from library 17 & 18, there is an excellent monitor in D_mon and the Statis programmes not only provide excellent calculations but can display them in 3-D graph form.

Many members had their second library guide updated at the Swindon workshop but if you have not had your copy revised within the last 3 months you should send it to your sublibrarian for updating. There is no charge for this but you should of course include a stamped addressed Jiffy bag to cover return. Please do not send it to me unless you are an overseas member without a National sub-librarian. In this case I will have a record of supplying the original and it will probably be advantageous to have a new copy for which you only pay £2.00 for the cartridge including postage.

If you do not have the Library guides on cartridge they can be supplied by your sub-librarian in this country for (£1.50 each plus a stamped addressed Jiffy bag and a formatted cartridge or £7.00 for both direct from myself which includes the supply of cartridges and return postage by surface mail to any destination. Overseas sub-librarians have arrangements for payment to be made in local currency and can usually provide the cartridges or disks. All British sub-librarians with the exception of James Methley Can supply programmes on 3 1/2" disks as well as cartridges. James will supply on 3 1/4" 80 track disk only. I have received several reports of incompatibility between some disk systems (no names but you are warned). If this applies to your system send cartridges and transfer them to disk yourself.

Subject to agreement with PSION we will soon be able to supply the Library guide on Runtime ARCHIVE. There will be an additional charge of £l for the PSION royalty but the programme will be simpler and faster to run. members with the existing guides will be able to exchange them for the £1.00 royalty if they wish to do so or they can continue to have the guides updated. Some members have difficulty in accessing the guides and for the benefit of those who my not be familiar with the guides the procedure is to boot up ARCHIVE in monitor mode, place the guide in mdv2 and type RUN (enter). ARCHIVE will ask for a file name and you should then type LIBFILE (enter). The "Start" screen will be displayed and you then press enter again to reach the "Select" screen. From here it is advisable to type 1 (enter), y (enter) to sort and display the entire file. You can now opt to step through the entire database using the n key or obtain hard copy by selecting the p option. If you select p make sure you have plenty of paper in the printer - and plenty of time - there are 247 records in the first guide!

In Britain we have sub-librarians to cover the North, South and Midlands plus a 3 1/2" and 5 1/4" disk librarian and a Quality Controller for new submissions only. Finland, Sweden, Switzerland and Belgium have their own National sub-librarians and appointments will be made in the near future to cover Australasia and The Netherlands. Members outside these areas are covered by myself. To order library programmes you must enclose cartridges formatted to take the size of programme you require (Library requires at least one cartridge with a minimum of 220 free sectors or you will lose part of the programme), a stamped addressed Jiffy bag and the label from the QUANTA envelope showing your membership number, a cheque made out to QUANTA for any option charges with a note penciled on the back to say what they are. Payment for library programmes cannot be made by credit card but payment can be made by International Giro direct to the Library Account which is 35 032 4905. Many countries have this facility via their Post Offices if you do not have an account yourself. I find it both quick and safe and a message stating your requirements can be sent with the payment. If you have a Giro account yourself it is usually free, if not the most expensive I have come across is Japan which charges 200 yen, still cheaper than most methods of payment.

If you are requesting programmes to be supplied on disk allow six cartridges to an 80 track double sided, double density disk. Jerry Tresman has agreed to supply 3 1/2" disks if required and if you wish to take advantage of this you should add £5.00 per disk to the cheque for the options. Similar arrangements exist for the supply of cartridges at £2.00 each from myself. In both cases the price includes postage and packing by surface mail to any destination. This facility will be of particular interest to overseas members where local purchase of cartridges is either difficult or expensive.

In the past I have replaced a considerable number of cartridges that have gone astray because they were sent to former sub- librarians. Any changes to sub-librarians will be published in QUANTA after which I can take no responsibility for losses. We have a very good team of sub-librarians who are very willing to help and normally turn round requests for library programmes within a week but requests for part cartridges may be delayed because of the extra work involved (I would normally expect members to take the complete cartridge and delete those programmes they do not require).

Your sub-librarians are:-

Stephen Hewitt,
Portsdown Vicarage,
Portsdown Hill Road,
Portsmouth, P06 1BE.
Tel. 0705 375360

Alex Robertson,
12, Bude Close,
Crewe,
Cheshire, CW1 3XE.
Tel. 0270 257758

Mark Cumming,
117, Station Road,
Kings Heath,
Birmingham, B14 7TA.
Tel. 021 443 4783

James Methley,
4, Adamslie Crescent,
Kirkintilloch,
Glasgow
Tel. 0417 762938
5 1/4" disk only
only (No copying).

Jerry Tresman,
61, Ashdown Road,
Chandler's Ford,
S05 1QX.
Tel. (04215) 63129
3 1/2" disk only

Brian Davies,
72, Wharncliffe Street,
Hull,
HU5 3LY.
Tel. (0482) 43700
Library submissions

Johan Boman,
Molndalsvagen 7,
5-412 63 Gothenburg,
Sweden.

Wolfgang Goller,
Rosenstrasse 21,
CH 8105 Regensdorf,
Switzerland.

Ron Dwight,
Suvikuja 3b14,
02120 Espoo 12,
Finland.

Peter Jones,
Ave. G. Mullie 6,
1200 Bruxelles.

Australasia,
Dennis Croombs,
Address to follow.

Netherlands,
Details not yet
available.

Syd Day (Librarian),
241, Highfield Road,
Romford, RM5 3AW.
Tel: (0708) 27272

MORE ON BENCHMARKS

The claimed constant speed of SuperBASIC is simply a 32-bit processor feature. With its large address space different models aren't needed when addressing more than 64K.

The 8/32 and 16/32 processors are penalized with short benchmarks. A 16-bit processor, with its short addressing mode, could perform the short benchmarks better, but with large programmes and data, switching between segments slows things down dramatically.

This problem is exacerbated in SuperBASIC by its funny addressing and the use of two byte tokens. Simon Goodwin's compiler gives a large speed improvement, because it uses all the power of the addressing. Thanks, Simon.

Jose M Guzman,
Ramon y Cajal 51,
41005 Sevilla,
Spain.

SANDY/FARMINTEL EXPANSION RAM

I liked the look of this system when I attended the 17th ZX Microfair last year, and as they were demonstrating the system there and could sell them over the counter I felt fairly safe in parting with the money. Unfortunately the RAM card did not work properly when I got it home and having parted with four guaranteed cheques at the fair I was in fear for my money. I was further afraid when I heard from you, indirectly, that others had had difficulties and that there were possible design problems with the card.

The worst of these design problems is the lack of buffers for the address and data lines on the card even though it is of a "through connector" type. The card also used a suspect 64K dynamic RAM control chip in conjunction with a PAL expander to 256K, and further has no "reflection preventing" series RAM address resistors for the RAM chips. I was in the mood to attempt to have the four illegally written cheques stopped, but before I did I decided to phone the Texas Instruments technical enquiries number in Bedford.

The engineers there were very helpful and laid my mind at rest on two counts. First a very similar expansion of the controller using a PAL is recommended in one of their own application notes, and second the application note which recommends the use of series damping resistors on MOS dynamic RAM inputs only makes this recommendation for large arrays of chips. They did not consider the 16 chips needed for a 512K RAM to be a large array. Reassured in this way I decided to take a chance on Farmintel's reputation and returned the RAM card together with a letter asking for a replacement card.

The replacement card arrived within a very few working days (it was close to Christmas), but unfortunately although much better it still caused the occasional RAM test failure and the QL would crash within an hour or two. By this time I had had enough so I returned both the RAM card and the twin expansion unit and asked for a refund. The refund again turned up on the doorstep within a few days and I thought that was the end of the matter. I started to consider an internal upgrade, perhaps following the information you have published in the last two issues of QUANTA. Before I had done anything though 1 received a phone call from Farmintel saying that they had discovered the source of the problem, had soak tested the modified RAM cards overnight without any trouble, and would I like one on free trial? I did not have anything to lose so I agreed.

The new card had a few wire mods on it and worked perfectly. I had it on trial for nearly two weeks during which time it was in use for many hours without difficulty, even operating in the external expansion unit. The card also worked perfectly on Rob Sherratt's machine with a Silicon Express floppy disk interface.

As has been said by others the QL is a completely different machine with a large memory expansion. Ramdisk software allows the quick loading of the PSION packages or other software such as compilers, editors, linkers etc., and leaves the Microdrives free for userware or backups. Multiple EXECs of compiled editors allow simultaneous editing of files, e.g. a source file and a compiler listing which greatly speeds programme development and saves paper!

Having praised the card there are still some points to watch. Some of the cards I have seen have a heatsink on the regulator and others do not. This sink is certainly needed as the regulator gets far too hot without it. If readers order cards they should ensure they have such a sink.

One of the cards I have seen had edge connectors which were slightly damaged during flow soldering. Readers should carefully check these connectors before inserting the cards.

Farmintel do not supply any Ramdisk software which is a pity, but this is available on Microdrive cartridge, certainly commercially, and probably from the library?

The expander also has some small design weaknesses. It has a solid extruded aluminium case. The extrusion includes the right hand edge card guide. Components mounted very close to the edge (<0.15") of expansion cards are likely to be shorted out by this guide. The RAM card regulator fits in this category and since the consequences of a short on the regulator would undoubtedly be disastrous this needs careful watching. This is not really a problem because the best place for the RAM card is certainly inside the QL, not in the expander.

The expander also has no fixing to the QL except that provided by the edge connector. This is quite inadequate, especially if you intend to move your QL about with the power on. There are several methods by which this could be improved and I have informed Farmintel of my misgivings. In the meantime anyone competent with a few hand tools could probably solve this problem for themselves. Again this is not really a problem if you only want the RAM expansion since the expander is not needed.

The Sandy/Farmintel RAM expansion at £125 now represents very good value I think for those who do not wish to run the full cost of floppy disks and also do not relish the idea of dismembering or having dismembered their QL. No bridges are burned by going this route because disk only expansions are available from several sources and can be used with the RAM card since it has a through connector and derives its power from the QL's unregulated supply. There are advantages in being able to remove your RAM expansion too, as below. Farmintel responds quickly to communications both by phone and by letter, unlike some companies that have been reported in QUANTA. Their address is given below.

Farmintel Ltd.,
35, Stratton Way,
Biggleswade,
Bedfordshire, SG18 0NS.
Tel: (0234) 219814

John W Cook,
2, Manor Road,
Martlesham Heath,
Ipswich,
1P5 7SY
Tel: (0473)-625447

DIGITAL PRECISION SUPERCHARGE, LENSLOKS AND THINGS

I have a copy of Supercharge V 1.15. but unlike Mr Oliver from 2/12 was a little more patient with the Lenslok and the documentation.

Although the documentation may not be well printed and presented it is certainly all there. It can be used as a cover-to-cover work on the compiler or as a beginners guide or as a reference book, having a comprehensive index which usually points at the right page. I agree with Mr Oliver's comments about the lack of a folder, which was a mandatory purchase immediately after obtaining Supercharge.

The Lenslok is not at all difficult to use and only takes a couple of seconds with practise. Since it is only needed to compile the programmes and not to run already compiled ones it does not have to be used often. Nearly all programmes that are to be compiled can be tested prior to compilation so again limiting the number of times the Lenslok has to be used. Like the user in Belgium I find that with a few days of practise I can now decipher about 50% of codes without the use of the Lens. Since Supercharge gives me three chances of entering before needing to be reloaded I can get in 88% of the time without it. No doubt others can do even better. This must be a sad state of affairs from the software vendors point of view.

The compiler itself works very well. I find that three out of four previously written programmes will compile immediately without modification. Of the rest most only need fairly simple changes. Undoubtedly the worst limitation of the compiler is its failure to implement variable PROCedure parameters. If a lot of these have been used changes to the programme to make it compilable may be severe.

The speed increase achieved has always been at least 7x and usually 10x, without modifying the programme. With modifications to make use of the compilers fast integer arithmetic the speed increase is typically 15x.

The speed increase is not the whole story though. Many programmes load much more quickly after compiling due to the removal of the need to tokenise the input. Multiple copies of programmes can be EXECed simultaneously, memory permitting. Quite large programmes can be compiled without the need of extended memory. I find working with Supercharge much easier than using some other compilers available for the QL, and I don't even like BASIC!

John W Cook,
2, Manor Road,
Martlesham Heath,
Ipswich,
IP5 7SY
Tel: (0473)-625447

A FEW NOTES RELATING To BCPL

1. Random numbers

The library routine RANDOM(seed) produces 8 - 10 digit negative and positive Integers. For must purposes it is more useful to have a routine which equates to the SuperBASIC function RND(x TO y).

For simulation programmes it is also desirable to have available a uniform stream of random numbers such that each integer within a specified range is equally likely. If the simulation requires a particular "probability distribution" it can be achieved by additional manipulation of the output from the random number generator.

2. Efficiency of Random number generators

In order to examine the efficiency of any particular generator it is possible to carry out statistical tests to ascertain its suitability.

I set out below some of the results of my investigations :
10,000 calls to RND(1 TO 100) (Each cell should contain 100)
(Each cell should contain 100).

***** For Workshop Details. see PAGE 2 *************

SuperBASIC : n =!	1	2	3	4	5	6	7	8	9	10
!	101	91	88	109	103	116	82	107	84	82
+10!	107	100	106	88	106	90	107	89	110	92
+20!	101	111	102	95	107	106	91	96	95	110
+30!	89	106	111	121	104	85	98	105	96	110
40!	101	88	101	83	102	97	105	113	103	102
+50!	88	103	106	105	105	88	127	85	90	102
+60!	107	94	96	96	99	97	100	100	114	104
+70!	92	111	108	90	79	90	107	103	108	101
+80!	88	91	104	115	119	108	102	106	96	98
+90!	107	108	110	101	97	81	107	96	86	91

i.e. 10,000 calls to RND(1 TO 100) gave 108 results = 92

The Statistical test is the chi-squared "goodness of fit" test. The value of chi-squared is calculated as follows :-

Sum (from i=1 to 100) of (Cell_content(i) - 10000/100 1-2 divided by 10000/100) ^2 divided by 10000/100

For the above table the value of chi-squared = 91.4

Consultation with the appropriate Statistical Tables reveals that for 99 degrees of freedom (n-1) at the 10% level the value of chi-squared should be 117.

10,000 calls to RND(low,high) with low=1 and high=100

BCPL: n = !	1	2	3	4	5	6	7	8	9	10
	62	43	50	41	47	52	42	47	50	147
1st +10!	509	504	482	544	520	524	470	503	526	555
Attempt +20!	501	135	51	43	43	44	41	49	29	44
+30!	48	49	46	43	48	48	45	45	38	53
+40!	36	51	65	52	50	58	45	54	39	55
+50!	39	49	59	36	54	51	39	50	37	40
+60!	45	48	42	55	38	39	54	42	50	49
+70!	33	52	42	36	51	43	43	62	47	48
+80!	57	60	46	41	52	48	59	45	47	51
+90!	38	53	53	42	49	57	60	53	45	5

Clearly the value of chi-squared in this case will be enormous and not worth calculating. It can be seen from the table that there is a distinct bias towards the numbers in the range 10 to 22. In order to "smooth out" this bias it was necessary to apply an additional algorithm to the output of the random number generator. The results of much trial and error is shown in the following table :

BCPL: n = !		1	2	3	4	5	6	7	8	9	10
		94	124	95	96	91	100	107	112	94	93
Final	+10!	91	105	97	110	95	122	110	98	111	101
Version	+20!	108	110	99	95	90	104	97	103	97	99
	+30!	91	93	100	85	111	101	96	100	97	99
	+40!	92	103	105	98	104	92	97	93	102	93
	+50!	79	109	97	109	90	94	91	115	100	110
	+60!	89	106	85	85	94	107	101	98	87	97
	+70!	99	97	81	94	106	114	98	10	92	101
	+80!	100	113	107	120	107	128	108	99	93	102
	+90!	118	95	86	91	100	98	106	94	103	103

chi-squared = 81

It is also important for the routine to work over a variety of ranges with equal efficiency. This was done but the results are not set out here for reasons of brevity. The routine itself follows after this dissertation.

3. MULDIV(a,b,c) routine

I have attempted to use this routine in a number of programmes but each time that it is used in a repetitive loop it seems to cause the programme to hang after a number of iterations. If I substitute "a*b/c" the programme runs without difficulty. I don't know whether anyone else has detected this difficulty.

4. Error diagnostics

Is it possible to obtain some documentation on the error diagnostic messages which are produced either during compilation or run-time?

Also can these messages be directed to a printer?

David Titley,
41, Park Lane,
Cottingham,
N. Humberside HU16 5RX.

```
// BCPL Routine .... as SuperBASIC RND(x TO y)

GLOBAL
$( rand : ug
$)

LET START()    BE
$( ………
   ..……..
   rand:= TIME ()                          //sets initial seed
   ……….
   ……….
$)

AND RND(low,high)= VALOF
$( LET factor = ?
```

***** For Workshop Details. see PAGE 2 *************

```
rand := RANDOM(rand)                         //use previous value seed
IF rand<0 THEN rand := -1*rand               //only positive integers
Factor : = . rand/10000                      //reduce size

UNTIL factor<10000 D0
$( factor := factor-100000 $)

IF factor<15000 THEN                          // filter algorithm starts here
$( LET factor 2, num b2 = ?,?

    Rand:= RANDOM(rand)
    Factor 2 := rand/1000000

    UNTIL factor 2<1000   D0
    $( factor 2:= factor 2-1000  $)

        num b2 := 1 + 6*factor 2/1000         // values determined by
                                              // trial and error
        IF num b2>2 THEN
        S( factor := factor*6663/1000 +
            Num b2*10 $)
$)

IF factor>100000 THEN factor := 100000
factor := factor*(high+l-low)/100000+low

RESULTIS factor
$)
```

MID-CHESHIRE GROUP

Several of us have got together to form the Mid-Cheshire QL User Group. We intend to meet fortnightly in Crewe, and would like to hear from any prospective members.

David Whittick,
72, South Street,
Crewe,
Cheshire CW2 6HL.
Tel: (0270) 255753

NEW PRODUCTS

Talent have released a 2-D CAD package, and will soon have a PCB design package available. They also have an "Assembler Workbench", with an integrated editor, assembler and debugger. They will also be selling the compiler which they use to develop their text adventures - Zkul and West. Members interested in using the QL for data capture will be interested in an 8-bit ADC system that plugs into the ROM port. An optional DAC can also be included. Details from Talent on 041-552 2128

Prospero Software's FORTRAN compiler is now available at just under £100. They've let me have a copy, and it looks excellent. A review will be in the next issue. Prospero are on 01-741 8531.

Ken Smith (Data Management) has some software that lets you get onto Prestel with a standard WS2000 modem (no additional hardware needed). Details on (0904) 760351.

Sandy have produced an expansion unit very like the one developed by Medic, with 512K and a disk interface. I should have one for review shortly. Sandy are on (0234) 219814.

Leon Heller

QL SUPER BACKGAMMON V 3.0 FROM DIGITAL PRECISION

At last! a computer game that restores one's battered faith. This programme actually lives up to its advertising. It's fast, it's good looking and plays a competent game of backgammon.

From an F1/F2 reset the game loads in less than 20 seconds and then you are asked if you want instructions, how many players, 1 or 2 or the computer playing itself, whether you want to use the doubling dice and if you want the computer to throw the dice.

When complete you are given a bright screen representation of a conventional backgammon board set up for play - green background and red and black points with green and grey men placed to start. The computer throws a die for each player (assuming you have chosen this option and it really is easier) to see who starts, then off you go. On the QL's turn each move is written up on the screen as the men are moved. The throw of the dice is shown on screen and on your turn you have to enter the numbered point you want to move a man from, then the number of the point you want to move it to. The man is then moved almost instantly to its new point.

Play carries on until all your own men are into your "home", when the game will remind you that you can start bearing off by telling you "home" is point 0. As you start bearing off the men they stack up on the left of the screen, much like a pile of poker chips (a nice touch when they could have just disappeared). When the game is over, the screen clears and splits up into mini-screens to tell you how long you took, how long the computer took (this can make you feel inferior as the computer doesn't actually have to input the moves) and whether the game has been doubled or not.

The game comes with three separate forms of instructions - those on-screen, the cartridge insert (tiny type but good) and a QUILL document on the cartridge. This last is very good and gives all the essentials of playing. It also cleared up a bad first impression of this backgammon. Digital Precision had suggested I try a computer-v-computer game to see the programme in action. Watching this I was horrified that the game had a cavalier attitude about leaving "blots" all over the board. Apparently in this mode the players are on different levels, one being more daring than the other!
It also revealed that the programme had been written in SuperBASIC and compiled on Digital precision's SUPERCHARGE into machine code. This has to be a good advert for SUPERCHARGE.

Bugs found? - only two I could see. If you wrongly tell the computer you are stuck, the message giving a hint stays on the screen only fleetingly. The other is when playing a second or subsequent game with unchanged options the doubling dice is no longer functional.

Things to go wrong? - if you play sensibly, none I have found. I managed to crash the game by offering a double of 32768 times the original stake but anyone who is doing that has to be mad or a millionaire (and in either case probably doesn't need a QL). The game happily shows (and well) up to ten men on any point but any more aren't shown. If a player gets into this position you would be well-advised to take up golf!

Freddy Vachha of Digital Precision tells me that this programme can be multi-tasked with other Digital Precision programmes and SuperBASIC programmes. I take him at his word because I haven't tried. On AI, he also says that Super Backgammon "uses a defined-depth, full-width alpha beta search (minimax) with killer heuristic." No, I didn't understand it but I confess it works.

I have no hesitation in recommending this game to QUANTA readers, both novices and enthusiasts (me) at backgammon. Novices needn't be worried about making a wrong move because the game won't let you. Super Backgammon can be bought at a QUANTA discount of £11.95 (cheaper than a board) from:

Digital Precision Ltd.,
222, The Avenue,
Chingford,
London E4 9SE.
Tel: 01-527 5493

Now if they would only produce a Bridge game to the same standard...!

Ian McRobert,
115, Park Road,
Peterborough PE1 2TR
.

QUANTA ARCHIVE FOR HISTORIANS

I notice in different places one or two references to historical study that various QL users are involved in. In QL USER Dr. Andy Carmichael published two halves of an interesting programme for genealogical trees. (Fully typed in for some time, mine has not yet been persuaded to function.) Another member wrote about using his QL to put on details of the 1851 census figures and M.F. Jackson in Feb 85 QUANTA similarly mentioned genealogy (and helpfully answered a query of mine.)

In the Nov 85 QUANTA J.W.M. Stone has pointed out how useful it would be to have a spare key in QUILL that could call up Super-Script (needed for transcription of Elizabethan hand.) For this I suggest contacting KEYDEFINE (Barry Ashfield of Psientific Software, 37, Cottesmore Road, Hessle. HU13 9JQ) who provide a programme which will make that key and many others available for such needs.

I am planning how to put the names of some 2000 Elizabethans on ARCHIVE, together with relevant information and local data. At present, heeding warnings about the need to be careful of memory I intend to divide details of them up between three files and then have other files to cover official posts, events of each year, ship's, references and various other subjects. So far I have created 16 experimental files and am trying to work out the best way to use these together.

DATES. The QL clock starts at 1969 (or 1961, if you go on a different route to find its beginning). How can I use its capacity to put myself back 400 years and move around with the dates of the 16th century?

QUILL: TIME - Can one get date/time printed into a QUILL doc from the clock? IMPORT - For me this turns out to be MERGE. It this deliberate or accidental?

AUTODRAW. I am lost in admiration for the detail and sheer scope of this Library programme. However, one snag if you are as poor at drawing as I am. What do you do if you draw the wrong line: how do you erase any of it?

Linking the QL to an Olivetti Praxis 45D: this is a fine machine with a daisy-wheel printer, better in presentation than my SHINWA but the interface costs almost more than the SHINWA by itself. One firm was almost ready to make up an Interface for less than half the price of the Olivetti job but in the end pressure of work precluded. Is any other firm making custom interfaces for such purposes? (As a matter of interest, the Chinese News Agency is called SHINWA - anyone know why a -1 Japanese-0 printer has the name?)

ABACUS. Try as I may, I can't manage to do some of the simplest textual things with this programme. All I want to do is to print along the rows
```
1975                1976                and so on
```

JAN   APR   JUL   OCT   JAN   APR   JUL   OCT   and   then something like:-

```
RATES       :    RATES
RENT             RENT
BOOZE            BOOZE
```

down the columns - which I want to repeat, but, short of typing it all in I can't manage this.
ECHO, COPY, REPT all seem to work only on doing things to figures or simply reproduce identically across vast areas.

What's the solution? QLUser - is there any recourse for those with unexpired subs to this expired periodical? QUILL_Hob: How can I replace the Help programme on QUILL with a facility of my own choosing? It will not accept a change.

ARCHIVE is highly ingenious and when it works properly is a real treat (although BACKUP is one considerable weakness). But the error messages are often quite unrevealing and therefore inadequate. To be told that a file cannot be opened implies that it is on the tape called and being looked at; often this is not the case: it may not exist. PSION should be able to manage much better than that.

Having never previously been able to do more than look at a corrupted ARCHIVE file by COPYing to scr_ I discovered that in addition I could COPY to ser1. The result was to provide me with the essential facts cocooned in a load of garbage. Not at all usable as a file, but very helpful to ensure that no vital facts were quite lost. (Don't OPEN a channel, though.)

With the demise of QLUSER it seems all the more essential that a BEGINNER'S. SECTION should continue to exist in QUANTA. I have a set of ARCHIVE programmes that I use to enter and manipulate my various data files. The principal aim is to get single keypresses or something near that.

The programmes consist of a few dozen simple linked procedures. These now save a considerable amount of time and also help me to avoid certain regular mistakes. However, they are also fairly straightforward, e.g.

```
proc n
next
display
endproc
```

Whilst building up these programmes, I find that the simple

```
proc e
edit
Endproc
```

and its accompaniment

```
proc s
save "Alphabet prg" [or "All_purpose_prg" etc.]
endproc
```
are invaluable for keeping me on the right lines.

My system will usually start with RUN   e.g. RUN 'A', which may consist of:

```
proc start
print at 5,5;"Loading Alphabet Programme"
abc
endproc
```

"proc abc" will then take me into a series of proc a[alter],
proc b[back], proc c [close], etc. ending in

```
proc zz
print at 5,5;"Loading All_purpose Programme"
run "All_purpose_prg"
endproc
```

and the All_purpose Programme commences with

```
proc abc
print at 5,5;"Loading Alphabet_prg"
endproc
```

so that I can go round in a circle with merely single or double key presses if I so desire and need to keep switching to and fro.

For handling the files themselves such procedures as

```
proc ua
use "a"
endproc
```

are convenient.

The programmes from Chas Dillon and other sources are neater and often more suitable, but sometimes in trying to adapt them I'm not always too sure of what I'm doing, so to keep it simple may be advisable.

/* I must apologise to whoever it was that wrote this article, as I seem to have mislaid their name and address. LFH */

VOYAGER II MODEM

I would like to inform members of a new MODEM I have purchased recently marketed by Modem House. This is the VOYAGER 11. I always wanted a Bright Star but for one reason or another I could not obtain one. I ordered a VOYAGER 11 which to my surprise came soon after I ordered it. Much to my alarm when I tried it, it did not seem to work. After calls to Keith Rose, who was very patient, I returned the modem to Modem House who checked it out and found nothing wrong with it. It was returned to me within the week!

Discussions with their technical department eventually revealed the reason I could not get it to work. For some inexplicable reason they have configured the RS232 interface with pin 1 as signal ground instead of pin 7. I therefore made a little black box to swap pin 7 to pin 1 using a male and female 25 way plug. I took the opportunity to include a DPDT switch to switch on and off lines 4 and 20. This has enabled me to dial and then when I hear the carrier signal I can switch in lines 4 and 20 which captures the line .This is a temporary measure until I can obtain suitable software to auto dial which the Voyager 11 is capable of. I am using the well known Modaptor from QCODE to enable me to use split baud rates. This was supplied with Version 4 of their Terminal Software and makes using the QL very easy and has a similar format to the PSION packages.

I would like to say that both Keith Rose and Peter Johnson of Modem house treated my queries with patience and understanding and with a genuine willingness to help. It even reached the stage where Angie on the switchboard recognised my voice. Looking at the bulletin boards the QL is not very active yet and I would like to suggest that we concentrate on one Board or perhaps two so that our messages are not diluted. The one that is not overcrowded and not always engaged is (0705) 524805 Gosport Apricot.

George Cole,
270, Locksway Road,
Milton,
Southsea,
Hants. PO4 8LF
Tel: (0705) 734337

MIRACLE SYSTEMS 512K EXPANDERAM

Having read the review of this memory expansion in the February 1986 issue, I purchased one direct from the manufacturers. Overall I am very satisfied with the performance of the card, and hope that the following notes will help readers who are also looking for memory expansion.

The expansion is very well made, and mine came with a metal cover, rather than the plastic one described in the previous review.

The system works perfectly with my Silicon Express disk interface, the only real disadvantage being that the additional RAM increases the reset time to 15 seconds.

The disk interface and expansion project 13 cms out of my QL, but all the components are covered by the metal cover. Obviously the result is too "floppy" for use on the knee, but it should be an easy task to make a suitable base if I decide it is necessary.

The manufacturers guarantee the card for 12 months, but there is also a 14 day money back guarantee if you purchase from Miracle Systems directly.

In accordance with the excellent advice offered in QUANTA previously, I ordered my memory expansion in conjunction with a credit card. The goods arrived, well packed, by return of first class post. One reservation I had, was that Miracle Systems do not send goods by registered post. As I understand the situation, the purchaser could not hold the vendor responsible if they arrived damaged, or never arrived at all, provided they had been properly packed and posted. Fortunately I already had insurance cover for this type of loss, but I think purchasers would be well advised to insist that registered post is used for goods of high value.

There are still some programmes which do not run properly with an expanded QL. There are no problems with the PSION version 2 suite, but: their Chess poses problems, and so does Talent's GraphiQL. The other commercial programme I regularly use is KEYDEFINE from Psientific Software, and I can report that this functions exceptionally well with the additional memory. In fact when using QUILL, whole paragraphs can be defined on individual keys, without any risk of approaching the limits of memory. My own cures for the problems with Chess and GraphiQL are shown below. Perhaps members could report any problems they have had with commercial software on expanded QLs? Unfortunately some suppliers seldom seem to know, or care, what happens if you have more than 128K RAM.

CHESS:delete lines 110 & 120 from the BOOT programme on your BACKUP copy. This is the BBOOT programme on the master cartridge It seems to me an ill advised move, but the programme will then run normally as far as I have been able to discover.

GRAPHIQL: replace line 140 of the BOOT programme of your BACKUP copy with the following:

140 IF c<=268992 THEN GO TO 120

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3, Bransdale Road,
Nottingham NG11 9JG

REVIEW OF DIGITAL PRECISION'S SUPERFORTH AND REVERSI

First impressions are very good, the entire kit and the weighty manual are packed in a very sturdy box.

The manual is purportedly 40000 words long, and does not contain the Forth 83 specification usually supplied with other Forth interpreters. The manual is loose leaf with only a clip holding the whole lot together, so putting it in a binder is essential.

The backing--up procedure is a complete doddle and can copy to formatted or unformatted tapes in either drive, or copying to other media.

The next thing to do is to play with the demonstration, the Reversi programme. The source of the 1.2 version is given in the manual, but it was the 1.3 version with which I was supplied. I beat it 44-19 on the novice level, which they describe as a smashing victory, and 41-22 on the intermediate level three which they describe as strongly won. I didn't try any of the higher levels, since 30 seconds is a reasonable attention span. I disapprove very strongly of the method of "recursion" used in the programme. The maximum search depth is seven ply, so Gerry Jackson has defined seven arrays p0_board through to p6_board, and seven Forth words to set up pointers to these arrays and set up the pointer to the next highest recursion word. There are three sets of procedures that have been expanded in this way, and it is very inefficient. Is it standard procedure to produce a version of a recursive procedure for each level required, with a version of a local variable defined explicitly as A0 through to A99 ?

To publish the source of the programme is a very good idea, since it does give a good idea of how to use the full facilities that are on offer, more of which later.

The documentation is divided into 13 chapters as follows :

Introduction.

SUPERFORTH fundamentals: gives a description of Forth generally, always referring to it as SUPERFORTH and the syntax for specification of stack input and output when describing a Forth word.

SUPERFORTH operations: hacks through a long list of Forth '83 words sorted into appropriate groups rather that alphabetically.

All the expected control structures are there, IF ..ELSE ..THEN, BEGIN ..UNTIL, BEGIN ..WHILE ..REPEAT, DO ..LOOP, DO ..+LOOP, CASE ..OF DEFAULT ..ENDCASE, and I,J and K to copy the loop values to the computation stack.

Under the heading of screen control, all the QDOS traps are introduced, CLS, CSIZE, CURSOR, CURSOR_ON, CURSOR OFF, FLASH ON,

The interpreter uses the usual (for Forth) 16 bit addressing for accessing internal addresses which are addressed relative to the base of Forth. However, one may use 32 bit addresses with words such as A!, A@, AC!, AC@, A2!, A2@, to access the screen or acquired memory.

Microdrive and Floppy disk handling. Input may be taken from any of three input streams, keyboard, microdrive or floppy. The input is taken from the usual 1K blocks on the medium, or from a named file. Blocks may be concatenated to make a named file.
The screen editor is function-key driven, and provides all the functions necessary to edit a forth screen. The editor may or may not be loaded at startup time, and the windows it uses are configurable then. The source of the editor is included on the tape.

Initialisation. At system startup, screen 1 of the boot device is loaded and executed. It is used to configure the console channel, the paper, ink and strip colours, define the character size, and load the editor.

Error handling. The error messages are full and descriptive.

"Advanced" techniques. This chapter covers the more advanced words of Forth, [,], [COMPILE], „ C, ALLOT, DOES>, SMUDGE, and so on. Dictionary and Vocabulary management is specified and also explained.

The Floating point pack is a simple set of extensions that use the QDOS routines. It provides for FDUP, FDROP, FSWAP, FOVER, F@, F!, F>R, FR>, FROT, FPICK, FROLL, F0=, F0‹, F0>, F<, F>, F=, FCONSTANT, FVARIABLE, F-, F*, F/, FABS, FNEGATE, COS, SIN, TAN, COT, ARCSIN, ARCCOS, ARCTAN, ARCCOT, SQRT, LN, LOG10, EXP, F->S, F->D, INT, S->F, D->F, F., F$. This package is loaded optionally.

QDOS facilities The main use described is that of the channel ID management enabling input from and output to any device. Multi-tasking is well covered. Tasks may be reentrant and have their own local USER space. All the QDOS routines have been covered, you can start, stop, exec, suspend, freeze, release, unfreeze tasks, change their priority, and kill or remove them. Sound is also supported. As an example, on screen 5 supplied, there is a clock task which runs in the top right hand corner of the screen as a reminder of how long ago you should have gone to bed.

The Implementation guide covers the memory map, stack usage, dictionary structure, and register usage basic information for the assembler programmer interfacing to the Forth environment.

Reversi. This chapter provides an outline of the game, the operation of the programme and a listing of an old version.

Index. Very useful to have since the word explanations in the manual are out of order, but in context.

Gerry Jackson has done a very sound job in installing Forth '83 on the QL, and extending it to encompass the very great features of QDOS. The system itself is very easy to use, the editor is integrated, and development of source code easy. A lot of thought has gone into the manual. My one reservation about it is that there is no complete Forth '83 guide included, so that the interested programmer can go deeper into the bowels of Forth, knowing some of the lowest level words and structures.

The example Forth screens given are:-

1. Login block.
2. Words to set the clock
3. Editor definition block, sets the window sizes, characters per line and so on.
4. Convert consecutive source blocks into a named file.
5. Clock task - a very useful example, multi-tasking is one of the greatest features of QDOS, and is justly served by SUPERFORTH
6. VLIST, to list the dictionary.
7. TURNKEY, to take the dictionary and make a stand-alone exec-able module.
8. Include a binary file defined word. All the register usages are given, and an example assembler file provided which gives the format for defining your own words and including them in the dictionary.
9. Create a new default device type, so that when we all have $100, 4GB erasable optical disks, we can define opt_ as our default device. Speaking of which I hope QDOS uses longwords for block numbering ...

In conclusion, DP. appear to have launched a good product, which is an invaluable developers tool at a good price. For £26.95 minus £11.95 for the game, £15.00 seems a small price to pay.

Digital Precision's address is:-

Digital Precision Ltd.,
222, The Avenue,
Chingford,
London. E4 9SE
Tel: 01-527 5493

Dave Hodgkinson

BIRMINGHAM WORKSHOP 26 JANUARY

The event was held at the New Imperial Hotel in the centre of Birmingham, just off New Street. Attendance was excellent with about 45 members turning up. There were no problems with seating arrangements for the lectures, considering the large number of people who attended them. Those bringing their QLs along were not forgotten as the adjoining room was pressed into service as a systems room, although not before many early arrivals had set up shop at the back of the lecture room. It is probably better to have separate lecture and systems rooms due to the noise from one affecting the other.

The first lecture was chaired by Leon Heller on the subject of hardware add-ons. And RAM expansions. Disks and modems were covered including the pros and cons of combined RAM expansions and disc interfaces and file transfer protocols. The gist of the discussion on disc interfaces was that most offered similar facilities at a similar price.

The second lecture was a session on languages for the QL hosted by Leon Heller. Given this, the session became heavily biased towards C, but many other high-level languages were covered with Leon giving us some feel for the more obscure ones like APL and Forth.

After lunch Leon explained how to perform a 512K internal memory upgrade, having brought his own QL with the mods performed for illustration. Having things explained step by step would, I imagine, be of great help to those wanting to attempt the upgrade. Personally,I would think very carefully before doing it, as it would be quite easy to damage the PCB in the QL which would be extremely difficult to fix, amongst other things. You would of course invalidate your guarantee!

Following this came the Supercharge BASIC compiler, with a sort of dialogue between Chas Dillon, a user of the package, and Simon Goodwin, its author, on its plusses, such as multitasking and speed, as well as shortcomings, such as restrictions on parameter passing to functions and procedures.

Possibly the best and certainly the most mouth-watering part of the day came with a demo of the Commodore Amiga, whose graphics must literally be seen to be believed! Unfortunately the demonstrator left the sound cable in his office so we could not witness its much-vaunted. stereo sound synthesis capabilities and had to be content with drawing beards on scantily-clad ladies. This machine also is capable of multitasking and the demo with seven graphics displays on the screen at once was particularly impressive, while the resolution and range of colours available is stunning. A good toy, if you happen to have £1500 spare when it comes out officially around March.

Other things went on as well, such as connecting up modems to get on to Prestel, which we managed by the end of the day. All in all, a very enjoyable way to spend the Sunday.

Neville Smith.

REVIEW OF FOUR ASSEMBLER PACKAGES

In preparing this review I took assemblers from the four main suppliers of assemblers for the QL, and tried to assess three things: responsiveness of the supplier to customers, facilities provided by the assembler package, and speed of operation of the assembler.

To judge the responsiveness of the suppliers, as the copies of the assemblers that I had were not necessarily up to date, I wrote to the suppliers and asked if they would care to provide up to date copies of their assembler packages for review. (I didn't ask MetaComCo, as I already had an up to date copy.) C1 and Adder both responded within about two weeks, with updated assembler packages and documentation. C1 have said that they will update any existing user with a version predating V 2.0 (i.e. prior to the release of their linker) for a fee of £6. Sinclair, as is sadly the case in my experience, totally ignored my letter (they have now had four months in which to reply!); as a result I have had to assume that the copy of the QL assembler I have is up to date.

For facilities provided, I had expected all the packages to be much the same. This proved not to be the case. In looking first at the assemblers, a number of differences were apparent. Firstly only two (Adder and Metacomco) support macros at all. The support provided is the bare minimum that could be called a macro facility, but all the same it is useful, and can be counted a definite plus (especially for a beginner typing in a programme that uses macros from one of the magazines!). Secondly, three provide facilities for separate assembly (all but the Adder). This is useful mainly for large programmes, where reassembly of large portions is unnecessary; for the beginner it is of little importance. Sadly no two of the three are compatible - the QL assembler has a unique and apparently inflexible system with little to recommend it; both C1 and Metacomco supply linkers and use a similar source code format, but unfortunately the object format is incompatible. Thirdly, only some supported generic mnemonics (ie allowed the use of, for example, "MOVE FRED,A6" instead of "MOVEA FRED,A6"). This is mainly an annoyance when typing in existing programmes which use the generics, while your assembler doesn't. The Metacomco assembler was the only one not to support generics. A number of other differences exist which will be covered later.

Each package also contained an editor. Both the QL and Metacomco assembler packages include the Metacomco text editor, which is by far the most powerful of those supplied. (The QL assembler is supplied with an early version of the editor which does not work with disks.) This is a general purpose editor, not integrated in any way with the assembler. Each of the others contained their own editor, in each case lacking some elementary editing commands (e.g. search and replace is missing from both). The C1 editor is partially integrated with the assembler, in that the errors in an assembled programme can be displayed in the text while editing - unfortunately it is all to easy to "correct" the included error display, and not the source. The Adder editor is integral with the assembler, and can also highlight lines with errors in them, and does so in a clearer way.

The Adder package also has an integral rudimentary debugger, which is a nice idea. If the implementation of the debugger was a little more complete (e.g. providing breakpoints and single step, and symbolic address entry) it would make this an easy recommendation for best assembler; unfortunately the implementation stops short of this. None of the others provides any debugging support.

Assembly speeds are presented in the following table, which gives the approximate time taken on an unexpanded QL, and a disk based QL with memory expansion, to assemble an early version of my monitor. As far as possible the same file was used in all cases - changes needed are noted later. The figures speak for themselves

Supplier	Microdrive	Disc
Adder	240	185
C1	49	23
QL	53	34
Metacomco	190	82

Special notes:

The QL assembler failed to assemble the expression:

£(65535)-((1<<(SBIT+8))+(1<<(TBIT+8)))

All other assemblers managed it (although the C1 assembler needed some changes to representation). This suggests it has problems with complex expressions which could prove awkward in some cases. (The above expression could be rewritten, but this may not always be true). Because of this, the lack of macros, the odd handling of separate assembly,and Sinclair's cavalier attitude to customers, I would not recommend this assembler.

The C1 assembler has a non-standard expression syntax (hence the need to change the above expression). It's no more difficult to use than any of the others, but again presents problems when copying a published programme. I also don't like the editor (though this is a personal thing; ideally see it yourself and try it out). Its lack of macros, and non-standard link format (it's also incompatible with the GST linker which looks set to become the QL standard) mean I also don't feel I can recommend this, though less strongly than the QL assembler. If you're using C1 Pascal, and want to interface to it, this is probably the best choice of assembler.

The Adder assembler had a good idea - the provision of a built in debugger - but didn't follow it through far enough. It does however help, and the integration of editor, assembler and debugger into a single RAM resident package would I think be useful to the beginner. Its not suitable for large programmes however, and I had trouble assembling my monitor with it on a standard QL. It's also slow (because it's partly written in an interpreted high level language, and carries it's own interpreter - I think it's a LISP variant) , though in real use this is compensated for, for small programmes, by not having to reload it from Microdrive after loading the editor to make corrections. I'd recommend this to beginners, provided you don't want to interface to someone else's high level language compilers.

This leaves the Metacomco product, which on balance I'd recommend for serious work, not because it's my ideal assembler (it isn't), but because it is the best of those available at present. The staff at Metacomco are also happy to answer technical queries (or at least I've found them so with their other products). On the other hand they're not necessarily quick to fix bugs - their current editor still contains a bug I reported to them last spring. It's not serious, but it is annoying - if you use repeated command mode blocks containing character deletes and line moves you'll find it. This assembler is the only one compatible with GST's linker, and hence the only one compatible with Metacomco's C compiler, though even there the compatibility is only partial (as with all these assemblers the "SECTION" directive is not supported).

ADDENDUM

The above review was passed to each of the suppliers for comment (for the QL assembler to GST this time!). Only Metacomco and GST responded.

GST have asked us to point out the following:

1.   The linker provided with the Metacomco assembler is not the GST linker.

2.   They offer support to users of the QL assembler, and that their response time is acceptable. (Though they appear unconcerned that the package includes an editor which won't work with disks.)

3.   Their assembler is considerably smaller than the Metacomco assembler, allowing other programmes to run at the same time.

4.   Their assembler has flexible listing control. (So does the Metacomco package, the other two do not; I doubt if most users would feel that the format of the listings was terribly important!)

5.   The odd method of combining different assemblies was done in the belief that this would be more acceptable to the novice user than a full function linker; I feel that Metacomco's approach of providing a simple linker is as easy to understand, and more flexible.

GST have also sent me a copy of a new macro assembler which will be released in the near future, for review. I'll be reporting on this later, but at present I can say it's much more powerful than the other assemblers. I haven't been informed when it will be released, or how much it will cost, but I believe it is currently out for beta-testing. It seems likely that it will be considerably more expensive than the other assemblers available. It is to be supplied with their full-function linker, but it would appear that it will still be supplied with an editor which does not function correctly with disk drives.

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QUILL PRINTER DRIVERS

Readers who regularly use more than one type of printer or format may be interested in the following time saving method I use for selecting printer drivers. I use one printer with several different configurations, i.e. continuous forms, cut A4 sheets etc. The BOOT programme on my working QUILL cartridge is modified by inserting the programme listed below before the original line 1, renumbering the remainder. It is self explanatory and can be adapted to suit individual preference. When I first load QUILL select the paper type from the predefined configuration choices provided. The additional time involved is minimal and much quicker than running INSTALL_BAS.

The most time consuming-part is the once only task of setting up the different files on the working cartridge; the procedure is as follows:- Run INSTALL_BAS and define the required configurations giving each a separate name. Install the first in the normal way using F5 and when this is complete break the programme using CTRL-SPACE.
Type|:-

"COPY MDV1_PRINTER_DAT TO MDV1_xxx_DAT "

substituting the appropriate name for xxx. Return to INSTALL_BAS using RUN and repeat the process for the remaining configurations. The files will then be ready for use; it is of course wise to take a second backup at this point.

```
1 PRINT "Select QUILL printer driver"
2 PRINT "0 = Last type used"
3 PRINT "1 = Cut A4"
4 PRINT "2 = Continuous 11 inch"
5 PRINT "3 = Memo"
6 INPUT printer
7 SELect ON printer
8        =1
9        DELETE mdv1_printer_dat: COPY mdv1_a4_dat TO mdv1_printer_dat
10        =2
11        DELETE mdv1_printer_dat: COPY mdv1cf11_dat TO mdv1_printer_dat
12        =3
13        DELETE mdv1_printer_dat: COPY mdv1_memo_dat TO mdv1 printer_dat
14 END SELECT
****** followed by QUILL Boot programme ******
```

PS: May I comment on the report in Feb QUANTA that few requests are coming in for library programmes. This may well be in part due to the absurd requirement that members send in cartridges of 218 and 220 sectors. The Sinclair specification

guarantees a minimum of 200 sectors, this allows for tolerances in tape length, motor speed etc. Whilst a slow running machine may achieve 220 sectors on a long tape it is unreasonable to expect every member's machine to do this; none of mine are this long. Perhaps a revision of the size of the library tapes may bring more interest?

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/* Syd Day tells me that the library cartridges have been reorganised, and the problem John mentions should not arise. LFH */

SOME COMMENTS ON ROM SUPERTOOLKIT II

Having used Tony Tebby's Supertoolkit for about six weeks I feel I should pass on a few words about it. I already had some of the Toolkit commands in my disk ROM so I bought the Toolkit ROM with just two of its features in mind - Pipes and command line parameter passing. In fact I now use many more of Toolkits features and consider I only had half of the QL's capabilities before I got the Toolkit!

The features Toolkit adds are far too numerous to cover fully here as about 120 new or improved commands are added. To describe it fully would mean virtually copying the 52 mostly double-sided pages of the manual which would be too much for our little mag. to handle. Instead I intend to cover just the features I find most useful. Perhaps other users could cover the aspects I skip so that we have eventually full coverage.

First, installation - just plug it in the ROM slot, switch on and observe the sign on banner.

Having got Toolkit installed load a BASIC programme and try out the full screen editor by typing "ed <ENTER>". This is only a simple programme editor with no search and replace facilities but having it immediately available makes it invaluable. This was not a feature that I would have got Toolkit for but it is probably the most used feature for me. The ability to scroll back and forward through a programme makes it useful just for examining a programme. The auto insertion of new lines is a feature I particularly like. No longer any need to load an editor to work on BASIC programmes.

Toolkits ability to allow setting defaults for programme and data devices is a boon. No longer any need to keep typing flp1 or mdv2_. My disk interface gave this facility but it is extended in Toolkit and if you don't have disks you must have Toolkit! Toolkit also provides sub-directories. If you have a hard disk this ability to change directory levels is a must. Even with floppies and a lot of small files it is a useful feature which I use. It's a step towards UNIX type sub-directories.

Next the wild-card copy, dir and delete features. To copy an mdv to a disk just type "WCOPY mdv2_,flp1_". No longer any need to load fast copy routines. This is as fast as the best. To copy all files just answer the yes/no/all/quit prompt with "a" - to copy selected files just answer "y" or "n" as required.

Using Toolkit there is no longer any need for programme lines like:

delete flp1_filename:save flp1_filename

Files can be overwritten at any time although you will be given an "overwrite? y/n' prompt as a reminder. So much better than "File exists!" appearing so often.

Now for my favourite feature. I have mentioned this before, I know. The last line recall and edit called by alt/enter keys. I wrote my own routine to do this but Tony's is better. The routine in Toolkit allows escape from the current edit using control/space as usual but having escaped if alt/enter is pressed again one is stepped round the whole 140 byte input buffer line by line to the previously entered lines. This is great. It's just what I am used to on the machines at work. Well done Tony!.

Next on my list of favourite features and what I primarily got Toolkit for is the ability to set up pipes from a command input line (another UNIX like feature). I can now write short filter programmes (mainly I use 'C') to filter or modify data. It can be passed from one filter to another just like in UNIX and eventually sent to another file or wherever I want it. Remember, this can all be done from the command input line and is just what I wanted. This is a feature not many other machines costing 10 times the price of a QL + Toolkit provide.

The next feature I did not expect to use at all but now couldn't be without - the Networking extensions. I had filled the expansion slot of my QL with a disk interface and fully loaded the bus with a soldered in memory expansion (see previous article). Further add-ons could only be achieved by buying a bus expander - that's until I spoke to Tony Tebby at the ZX Microfair. "If you only want one more expansion slot why not buy a second QL and network them together. It's cheaper than a four way expansion!", he said. I thought about this and had to agree. With the QL at £150 on the day of the Fair I had to make up my mind quick. I did and now have two QLs networking together using the features provided in the Toolkit. Using the Toolkit FSERVE feature my disk drives can be used by either machine, the printer is also available to each machine - at the same time if necessary due to the built in spool facility. The two machines can talk to each other and programmes and data can be transferred between them with no problems. I did need to phone Tony to get data over at first - I hadn't realised the data was not sent until the transfer channel was closed if the buffer was not filled but how nice to be able to get the problem solved in a few minutes that evening. Thanks, Tony. The rate of transfer of data using the network is not quite as quick as direct disk access but it is not slow enough to be any kind of problem to me. Loading a 32K screen to the remote machine from the server disk takes only a few seconds, I do not notice the extra time taken although it must of course take longer via the network. I now have a spare expansion port on which I can build a battery clock and parallel printer port etc. I also have a JS ROM machine as well as a JM as a bonus. Also five spare Microdrives - it all helps!

To get back to the Toolkit; the ability to get formatted numeric data out using the print using feature is a great advantage. I often want to use the QL as a programmable calculator and printer and want the numbers in a particular format. Toolkit allows this in many forms - like the old TRS80 print using but better. Great - another hole plugged!

Another feature I find most useful is being able to get memory from the QDOS heap direct from keyboard using the Toolkit ALCHP and RECHP commands. If one wants to run a machine code routine after starting up and loading jobs etc. memory can now be got from the heap for the purpose. If the code is no longer needed the memory can be returned. How did I do it before I got Toolkit? (I had to reboot and select a larger RESPR() ! What a chore !).

Spooler programmes abound for spooling to a printer but they all need loading first. Toolkit provides a spooler (to both my QLs via the network) which is permanently available. It even defaults to ser1 so only needs the command "spl filename" to do its work. Before I had Toolkit I just could not be bothered to keep loading a spooler when I found I needed it. Now I use the spooler regularly.

Toolkit allows saving strings to each alpha key using ALTKEY. Another feature provided elsewhere but being resident I can call the feature on the few occasions I want it without rebooting or filling memory with so many utilities I forget what I've loaded.

The JS machine has error recovery in its ROM but also has a major bug. A "when error" is never cleared, even when a "new" is done. Toolkit puts this right and makes the error recovery worth having.

I almost forgot the other reason I decided to get Toolkit. I had to have the ability to pass command line parameters to programmes. Having had this feature in CPM and on the machines at work I hated having to do extra programming to ask for the inputs and outputs. Tony has provided this feature in Toolkit and shows how it can be used from assembler in the manual.

As you will have gathered from the forgoing I am impressed by this new Toolkit of Tony's. I have found many more features useful than I ever expected to and could no longer consider using the QL for long without it. You must be thinking I must have something to criticize in it - I have - I cannot have it loaded when I need the 'C' ROM in the socket!. However I have soldered the two ROMs piggy-back and can select either to boot with at the flick of a switch.

Please don't forget that I have only covered the features I use most in the Toolkit. There are many more you may find even more use for.

I have no connection with Tony Tebby who wrote the Toolkit or Qjump from who I obtained them other than as a customer - satisfied as you will have seen from my enthusiasm for the product .

Roy Barber
01-304 3856

EPROM CARTRIDGE PROGRAMMING SERVICE

Having purchased an EPROM programmer for use with my QL computer, I am now in the position to offer a EPROM cartridge programming service for members of QUANTA who would like their own machine code programmes, toolkits, utilities, etc on plug-in EPROM cartridges.

Please contact me for further details.

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PSION'S QDRAW

QDRAW was released with perhaps a shade too much hype, and has paid for it by receiving an indifferent press. In particular it has been compared unfavourably with Talent's GraphiQL. As it happens I have worked quite extensively with both programmes, and can therefore assess their relative merits and demerits. Before proceeding I should make clear that I have not used QL Paint, the enhanced as largely menu-driven version of GraphiQL which is now available from Sinclair Research.

I was at first attracted to QDRAW by the fact that it will handle the QL's high resolution mode, as GraphiQL will not (though a high res version was promised when the Talent programme was originally released). To anyone wishing to combine text with graphics the ability to use 80-character mode is a distinct plus, even if it does mean working in four colours only. QDRAW can of course be used in 8-colour mode as well.

In most other respects the range of commands available to the QDRAW user make it a stripped-down version of the more expensive Talent package. Cursor movement is controlled by a cluster of keys at the left-hand side of the keyboard (cf Melbourne Draw on the Spectrum) rather than via the arrow keys - though the latter can be used if you find it impossible to break old habits. As with GraphiQL, the cursor can be speeded up by pressing SHIFT together with the appropriate movement key. Lines can be drawn (with automatic "rubber-banding") by combined use of the "1" and movement keys, and are made permanent on pressing the space bar. Pressing F3 sets a "point trail" mode in which a pixel is plotted at each cursor movement; F2 cancels this. The area of screen immediately around the cursor can be magnified several times, which is handy for complex designs. There is also a ready-made grid, available via the "g" key: in GraphiQL you only get a grid if you are prepared to draw it for yourself.

Other commands available allow for several "pen" thicknesses, area fill (any enclosed area, regular or irregular), standard file options and output to a range of printers. Saving of screens is noticeably faster than with GraphiQL.

So far so good. However, QDRAW has one almost disabling weakness: the absence of any facility for drawing circles or ellipses. This is an astonishing omission, particularly when it is remembered that with a package like GraphiQL the CIRCLE command is used not only for drawing circles but for just about any curved line, from the edge of a leaf to the outline of a mountain range. To create such shapes on QDRAW would be a task of considerable difficulty even for an accomplished draughtsman. For someone as artistically inept as myself it is a sheer impossibility.

The lack of any CIRCLE command is undoubtedly QDRAW's biggest failing. However there are compensations. A problem I have found with GraphiQL is that if I have second thoughts about the positioning of any large object on the screen I have to move it piecemeal, since BR ("block remember") only works with areas of limited size. QDRAW on the other hand allows a design of any size to be moved with ease. There is also an ingenious feature by which one shape can be superimposed on another leaving areas of any specified colour intact: the effect of this, as the QDRAW manual correctly says, is to make it appear that the new shape contents have been slid underneath the original shape - an attractive and sometimes startling concept.

In conclusion I would suggest that QDRAW and GraphiQL very largely complement one another. Generally I create graphic screens on GraphiQL, if only for the ease with which the package allows me to draw curved lines. However almost invariably there comes a moment when I want to carry out a fairly fundamental reediting of my design, and at this point QDRAW comes into its own. All I have to do is to load my GraphiQL file into QDRAW to enjoy the best of both worlds. For these features, and perhaps most of all for its high res mode, I consider £14.95 for QDRAW to be money well spent.

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SUPERCHARGE - FURTHER COMMENTS

1. User defined graphics can be implemented using CHAR USE from the Tebby toolkit package or, alternatively, a special routine is required based on Trap #3 with D0=25. Most published programmes poke the fount address from BASIC. This doesn't work.

2. There are a number of bugs in the early versions of Supercharge. Digital Precision are asking ten pounds for the latest update. This is appalling. The latest version is I believe 1.17.

3. The Lenslok system is terrible. More generally, I object strongly to the current wave of protection systems. I have a disk system which means that I have to remove the protection before I start. I would argue that they are a waste of time as they only put off the casual hacker!

4. The compiler is designed to be used with a minimal system. It would certainly be more use to me if it could be set up to multitask and use memory other than the screen. To do this effectively it would have to compile from a file.

5. I have used the compiler with a number of programmes and generally the conversion has been straightforward. Most recently I have compiled a programme from Number One Systems which analyses electronic circuits. The increase in speed was about 4 times rather than the 10 to 30 claimed.

Overall, Lenslok apart, I think the programme is well worth the money and certainly better value than the DP Monitor.

One or two other points if you have space. I am sorry to see QL User go. I'm even more sorry to see its replacement continuing to print long listings of numbers. Does anyone actually type them in?

Are the PSION 3 versions worth getting?

Has anyone designed a battery operated clock add-on. This must surely be worthwhile.

To multi-task with the Medic expansion first load the extensions supplied which include a routine called MULTI. Then type "MULTI flp1_archive", etc. Up to 4 programmes can be multitasked but QUILL must be the last as it grabs all the remaining memory. An additional 32k is required for each programme to save the screen.

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ZX MICROFAIR

The next ZX Microfair is on 10 May at the Horticultural Hall, Westminster. We will have our usual stand, and volunteers are needed (free admission, of course).

Q-LINKS

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SOFTWARE

Description	Manufacturer	R.R.P.	Our Price
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Crazy Painter	Microdeal	£13.95	£10.50
Cuthbert in Space	Microdeal	£14.95	£11.75
Hopper	Microdeal	£14.95	£11.75
Lands of Havoc	Microdeal	£19.95	£15.50
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PROPRIETOR: PETER R. FLEMING, 18 QUEEN STREET, HELENSBURGH.